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WINTER BLAHS AND SPRING IRRITABILITY: THE CHRONIC BUT SUBTLE BEHAVIORAL OPERATIONS[1]

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Summary.—Operation analyses, for which behavioral and environmental events are translated into reinforcement schedules, indicate that winter depression and spring irritability reported by people living in northern climates are dominated by four paradigms. They are (1) a shift in the ratio of negative to positive stimuli, (2) stimulus redundancy and satiation, (3) coerced hypoactivity or attenuation of free operant behavior, and (4) conditioned suppression or anxiety due to the progressive escalation of negative stimulus presentations. The chronic effects of these schedules on the behaviors of people living in cold climate during the winter season are discussed.

Symptoms of masked depression characterized by low-level malaise, sleep disturbances, constipation, and free-floating anxiety are commonly reported during January and February by people who live in northern climates. These behaviors may be coincident with or be followed by, during March and April, more frank symptoms of irritability, restlessness, strained social interactions at work, and the general feeling that "there must be something more to life." Traditionally, these response patterns have been blamed upon the winter climate.

Two of the most popular candidates used to explain these behaviors are the season-dependent alterations in light and temperature. The reduction in total sunshine hours has been correlated with vague pineal body—and endocrine-related behaviors, although the most well-designed experiments involved non-human animals. Lower mean outside temperature, which is a clear negative stimulus (as defined by the systematic escape from it), is also a factor. No doubt, these two variables interact since sunshine duration, flux density, and the option for heat absorption as a means of reducing cold exposure are interrelated.

Winter is also associated with subtle but persistent reinforcement schedule shifts that are optimally viewed within biweekly or monthly time frames. Careful operation analyses and time-sampled "behaviorograms" indicate that four major winter-related stimulus patterns influence our psychological responses during this season. They include (1) a subtle and gradual shift in the relative distribution of negative to positive stimuli, (2) stimulus redundancy (and hence satiation), (3) the consequences of coerced hypoactivity, and (4) the

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facilitation of anxiety (conditioned suppression) due to the escalated baseline (which becomes a cue for the anticipation) of negative stimuli.

The first operation is the gradual and maintained shift in the ratio of negative stimuli to positive stimuli, both being defined in terms of their behavioral consequences. There are two major classes of negative stimuli. Class 1 contains qualitatively different events, such as the occurrence of automobile failures, travel hazards, and snow removal. Class 2 stimuli involve the quantitative changes in the general aversiveness of daily microexposures to the environment that had previously been rewarding. Simple responses, like walking to the store, crossing the street to another office or just emergence from the living area are paired with aversion.

This shift in the polarity of the thousands of daily stimulus events over the winter weeks increases the influence of punishment paradigms. Characteristic of these operations, the punishment generalizes to other behaviors. With repeated micropunishers, most forms of initiative (free-operant) behaviors such as going to the movies, visiting friends or just ambulation, become less frequent. Locus of control scores shift to external sources and the first signs of learned helplessness, whereby reward delivery is perceived as response-independent, appear.

The second operation is coupled with the physical properties of winter: human animals are exposed to more or less the same stimuli day after day. Whereas summer is associated with a rich variety of multiple stimulus profiles (birds singing, smells, variable sound sources, free operant access to the outside), winter contains fewer alterations. Using the IRT^2/R_t equation to predict satiation time (Persinger, 1979), exposure to the same snow-covered or cold climate condition twice a day would result in habituation within about 40 days. Hence, if the first major redundant source occurred around 1 December, satiation (and depression or frustrative aggression) would begin to emerge by the first or second week in January.

Coerced hypoactivity, due primarily to the physical restraint of avoiding the cold by remaining within the living area, dominates the third operation. Low-level and maintained coerced hypoactivity (a reduction in free operant access) leads to lowered mood profiles. Frank irritability is a frequent correlate that contributes to the seasonal-dependence in domestic squabbles, social problems and conspicuously decreased work productivity. Chronic depression encourages overt escape responses such as drinking as well as covert escape responses such as suicidal ideation. Interestingly, the biogenic amines associated with anxiety and chronic depression are also implicated in sudden heart failures.

Because there is progressive increase in the proportion of negative stimuli, a conditioned suppression paradigm dominates the later winter and early spring period. Anxiety attacks are most frequently associated with symptoms of ap-

prehension, negative affect, sweating, and space-time distortion, but they can also be manifest as flu-like symptoms that could be diagnosed within a winter-time (viral) rationale. Some symptoms would be evoked by the relative sensory deprivation (cabin fever). This problem is especially pronounced in the geriatric population, who may be restrained for months within a small room due to physical, social or financial conditions.

Cumulative effects of these paradigms are most evident in the spring. Because the baseline is elevated in winter-related behaviors, fluctuations in weather, particularly warm, bright conditions, control more daily behavioral variance than during any other time of the year. Removal of these rewards by the replacement of winter conditions produces an exaggerated increase in irritability, depression, and even apprehension. Although temperature or duration of light may have been the original unconditioned stimuli associated with the winter blahs and spring irritability, they have large learned components. An occasional warm winter or impulse-like change in duration of light would not be expected to change this profile.

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